## Remarks

Applicant has added new claim 14. Applicant respectfully submits that no new matter was added by the amendment, as all of the amended matter was either previously illustrated or described in the drawings, written specification and/or claims of the present application. Entry of the amendment and favorable consideration thereof is earnestly requested.

Claim 1 requires "a high-frequency-heated substrate holder heated by electrical conduction and made from conductive material for holding the substrate with surface-to-surface contact, which substrate holder has a zone of higher electrical conductivity, characterized in that the zone of higher electrical conductivity substantially corresponds to the supported surface of the substrate."

Claim 14 requires among other limitations "a high-frequency heater heating said substrate holder by electrical conduction" and "said first substrate holder zone is substantially equal to an area taken up by the substrate."

Applicant notes that the Examiner has submitted that "thermal conductivity and electrical conductivity are directly proportional to one another as evidenced by the excerpt from www.physlink.com." (7/5/06 Official Action, p. 3.) Applicant notes that "thermal conductivity" and "electrical conductivity" are not interchangeable terms as the first relates to conduction of heat while the second relates to conduction of electricity. Heat may be a byproduct of electrical conduction, but the two concepts differ.

**1. European Patent EP0519608 ("Lum et al.")**

Applicant respectfully submits that Lum et al. fails to disclose a "high-frequency-heated substrate holder heated by electrical conduction" or "a zone of higher electrical conductivity" and that the zone "substantially corresponds to the supported surface of the substrate" as recited in Claim 1 or, "is substantially equal to an area taken up by the substrate" as recited in Claim 14.

First, with regard to the size of the zone of higher electrical conductivity, Lum et al. teaches that "disc 20 and susceptor block 12 are provided with respective recessed regions 20A and 12A so that the susceptor block surface, the exposed disc surface, and the exposed wafer surface are all coplanar." (*See*, FIGS. 5 & 10.) Accordingly, Lum et al. clearly discloses and teaches that the zone 20 extends beyond the wafer surface and extends upward to be coplanar with the susceptor block 12 surface and disc 20 surface.

Therefore, Lum et al. can not anticipate Claim 1 because Lum et al. fails to disclose a "substrate holder" that has a "zone of higher electrical conductivity" or that this zone "substantially corresponds to the supported surface of the substrate" as recited in Claim 1. Additionally, Lum et al. can not anticipate Claim 14 because Lum et al. fails to disclose that the "first substrate holder zone is substantially equal to an area taken up by the substrate" as recited in Claim 14. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987) ("a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.")

Applicant further notes that Lum et al. does not render Claims 1 and 14 obvious. It is well settled that the mere fact that references can be modified does not render the resultant modification obvious unless the prior art also suggests the desirability of the modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art "may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so."). In this case, there is no suggestion, rather, Lum et al. actually teaches away from such a modification. Accordingly, Lum et al. can not render Claims 1 or 14 obvious.

Second, with regard to the heating of the zone by electrical conduction, Lum et al. discloses that the substrate holder is heated by infrared lamps, therefore heat is applied to the disc which in turn comprises a thermally anisotropic material to re-direct the applied heat. Alternatively, Claims 1 and 14 recite that the substrate holder heated by electrical conduction and the flow of electricity in the area of higher electrical conduction generates heat that is transferred to the wafer. This is not an insignificant difference. As stated in the application, the "configuration makes is possible to compensate for heat transfer losses" and "has the associated advantage that by suitable overdimensioning of the zones of higher electrical conductivity, it is possible to generate a temperature profile." (p. 6, lns. 1-5.) In other words, the temperature may be tightly controlled by the design of the zone of higher electrical conductivity as heat is *not* directed toward the zone, rather the zone itself generates the heat creating a much more precise heating system. Lum et al. can not achieve the precise heating of the

presently claimed invention because Lum et al. uses a system that directs heat toward the disc. Accordingly, Lum et al. can not anticipate or render Claims 1 or 14 obvious.

**2. U.S. Patent No. 3,783,822 ("Wollam")**

Applicant respectfully submits that Wollam also fails to disclose a "high-frequency-heated substrate holder heated by electrical conduction" or "a zone of higher electrical conductivity" and that the zone "substantially corresponds to the supported surface of the substrate" as recited in Claim 1 or, "is substantially equal to an area taken up by the substrate" as recited in Claim 14.

The Examiner has submitted that "Wollam teaches having an RF (a form of high frequency) heated substrate holder (disc 60)." (7/5/06 Official Action, p. 3.) However, it is noted that the RF that the Examiner cites is not used in connection with FIG. 6 as the Examiner suggests, rather only with respect to FIG. 2. For example, Wollam discloses with regard to FIG. 6 that the "outer plate 68 carries beneath it a resistor heater element 74 substantially in registration with the portion thereof that extends beneath the discs in the set 71 and so that heater element 74 is in registration with the discs in this set." (Col. 6, ln. 67 – Col. 7, ln. 3.) Therefore, the embodiment that the Examiner cites uses a heater element to transmit thermal energy to the discs.

Though the Examiner has pointed to the appearance in the Wollam reference of an RF heated substrate, the mere appearance of specific structural components in isolation in a reference does not make it an anticipatory reference. *See Ex parte Beuther*, 71 U.S.P.Q.2d 1313, 1316 (BdPatApp&Int 2003) (unpublished) ("It is well

settled, however, that anticipation is not established if in reading a claim on something disclosed in a reference it is necessary to pick, choose and combine various portions of the disclosure.") (citing *In re Arkley*, 455 F.2d 586, 587-88, 172 U.S.P.Q. 524, 526 (C.C.P.A. 1972)). The Wollam reference does not disclose the system recited in claims 1 and 14, and applicant respectfully submits that the Examiner has simply pointed to the random appearance of specific structural components in isolation from each other (e.g., relating the RF heating in FIG. 2 with the thermally heated system of FIG. 6). Accordingly, Applicant submits that Wollam does not disclose a "high-frequency-heated substrate holder heated by electrical conduction" or "a zone of higher electrical conductivity" as required by claims 1 and 14.

Additionally, the Examiner has stated that the "holder further comprises a zone 102 (disc-shaped protruberance made of a higher thermal conductivity), see Fig. 6." (7/5/06 Official Action, p. 3.) However, Wollam discloses that the "purpose of the projection 102 is to place as much surface area of the disc immediately adjacent, but not touching, the heated plate 54 as it is feasible so that the heat is carried with reasonable efficiency by convection, conduction, and radiation from the plate into the discs." (Col. 8, Ins. 9-14.) Nowhere does Wollam teach, disclose or suggest that the substrate holder comprises two zones of differing electrical conductivity as recited by the claims. In addition, nowhere does Wollam teach or suggest that the "graphite susceptor disc 12" shown in the embodiment of FIG. 2 comprises two zones of differing electrical conductivity as recited by the claims.

Still further, Applicant notes that Wollam does not teach, disclose or suggest that the discs 70 (FIG. 6) or the graphite susceptor disc 12 (FIG. 2) comprises a zone of higher electrical conductivity that substantially corresponds to the supported surface of the substrate or, is substantially equal to an area taken up by the substrate. Rather, as seen in the figures, the wafer is substantially smaller than the discs. Accordingly, Wollam cannot anticipate claims 1 or 14.

Applicant further submits that claims 1 and 14 are not obvious in view of Wollam. It is well settled that the mere fact that references can be modified does not render the resultant modification obvious unless the prior art also suggests the desirability of the modification. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990) (fact that prior art "may be capable of being modified to run the way the apparatus is claimed, there must be some suggestion or motivation in the reference to do so."). In the present case, Applicant respectfully submits that there is no teaching or suggestion that the substrate holder in any of the embodiments includes zones if differing electrical conductivity as recited in claims 1 and 14. The suggestion to make a modification must come from the prior art reference, "[t]hat knowledge can not come from the applicant's invention itself." *In re Oetiker*, 977 F.2d, 1443, 1447 (Fed. Cir. 1992). *See also In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d 1438, 1442 (Fed. Cir. 1991) (suggestion to modify must be found in the prior art, not the applicant's disclosure). Accordingly, Wollam can not render claims 1 or 14 obvious.

**3. U.S. Patent No. 6,368,404 ("Gurary et al.")**

Applicant respectfully submits that Gurary et al. fails to disclose "a zone of higher electrical conductivity" and that the zone "substantially corresponds to the supported surface of the substrate" as recited in Claim 1 or, "is substantially equal to an area taken up by the substrate" as recited in Claim 14.

The Examiner has stated the "Gurary et al. teaches having a HF heated substrate holder (susceptor) 112 made of conductive material." (7/6/06 Official Action, p. 4.) However, the Examiner has failed to point to any location in Gurary et al. that discloses a substrate holder having two zones where one of the zones has "higher electrical conductivity" or that is substantially equal to an area taken up by the substrate. It is well settled that "a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). Accordingly, Gurary et al. can not anticipate claims 1 or 14.

Applicant further notes that there is absolutely no teaching or suggestion in Gurary et al. for a two zone where one of the zones is provided with higher electrical conductivity than the first zone and as such, can not render claims 1 and 14 obvious. *In re Mills*, 916 F.2d 680, 682, 16 USPQ2d 1430, 1432 (Fed. Cir. 1990). In addition, Gurary et al. actually teaches away from the limitation that a zone of higher electrical conductivity is substantially equal to an area taken up by the substrate as seen in FIGS. 2 and 3 where the wafer carrier is homogeneous and extends upward and around the wafer. (*See e.g.*, Col. 4, lns. 18-20.) *In re Vaeck*, 947 F.2d 488, 493, 20 U.S.P.Q.2d

1438, 1442 (Fed. Cir. 1991) ("There must be some reason, suggestion, or motivation found in the prior art whereby a person of ordinary skill in the field of the invention would make the combination. That knowledge can not come from the applicant's invention itself.") Accordingly, Gurary et al. can not render claims 1 and 14 obvious.

**U.S. Patent No. 6,740,167 ("Rupp et al.")**

Applicant respectfully submits that Rupp et al. fails to teach, disclose or suggest a substrate holder that has a zone of higher electrical conductivity or that the zone of higher electrical conductivity substantially corresponds to the supported surface of the substrate as recited in claim 1. Additionally, Rupp et al. fails to teach, disclose or suggest "a first substrate holder zone formed of a material exhibiting a first electrical conductivity", "a second substrate holder zone formed of a material exhibiting a second electrical conductivity, said first electrical conductivity being higher than the second electrical conductivity" and the "first substrate holder zone is substantially equal to an area taken up by the substrate" as recited in claim 14.

While the Examiner states that "Rupp further teaches that the material of the insert must be able to withstand high temperatures, a property synonymous with electrical conductivity", the Examiner fails to cite any support for this statement. (7/6/06 Official Action, p. 7.) The fact that the insert is exposed to and must withstand high temperatures does not support a reading that the insert comprises a second zone having higher electrical conductivity than the surrounding area. For example, ceramics

and cermets may withstand extremely high temperatures, but are know to be electrical insulators exhibiting poor electrical conductivity.

The Examiner next submits that various materials may be used to construct the insert. (7/6/06 Official Action, p. 7.) Again, the Examiner fails to point to a location in Rupp et al. where it teaches or suggests a substrate holder having a zone of higher electrical conductivity than the surrounding area. Rather, Rupp et al. is directed toward a system directed toward minimizing contamination of the wafer. (See e.g., Col. 2, ln. 33-41.) Nowhere does Rupp et al. teach that the insert has a higher electrical conductivity than the surrounding area.

The Examiner further submits that it would be obvious to provide inserts having differing electrical conductivity as different types of wafers may be processed and heated differently. (7/6/06 Official Action, p. 7.) Applicant notes however, that differential heating of various wafers is nowhere suggested in Rupp et al. and in fact does not appear possible as the system rotates in a planetary fashion. (See e.g., Col. 6, lns. 2-7.)

In addition, Rupp et al. fails to teach or suggest a zone of higher electrical conductivity substantially corresponds to the supported surface of the substrate as recited in claim 1, or that the "first substrate holder zone is substantially equal to an area taken up by the substrate" as recited in claim 14. Rather, Rupp et al. teaches that the insert is larger than the wafer extending well beyond the edges of the wafer. (*See*, FIG. 1.)

Accordingly, not only does Rupp et al. fail to teach a zone of higher electrical conductivity that is substantially equal to an area taken up by the substrate, Rupp et al. teaches away from this limitation. Therefore, Rupp et al. can not render claims 1 and 14 obvious.

It is respectfully submitted that claims 1-17, all of the claims remaining in the application, are in order for allowance and early notice to that effect is respectfully requested.

Respectfully submitted,

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**In the Drawings**

There are no amendments to the drawings.